

WHAT IS CLAIMED IS:

1. A drive unit for driving an objective lens of an optical head, the drive unit comprising:

a lens holder that holds the objective lens;

5 first, second and third system coils each including a pair of square flat coils of a same size and respective pair of square flat coils being provided on both side of the lens holder, the first and the second system coils being arranged in a direction perpendicular to the focusing
10 direction on each side of the lens holder, and the third system coils being arranged at a position displaced in the focusing direction from a central position of the first and the second system coils on each side of the lens holder;

a first wire, a second wire, a third wire and a common
15 wire that support the lens holder and supply an electric current to corresponding coils, the first wire and the common wire being connected to the first system coils, the second wire and the common wire being connected to the second system coils, and the third wire and the common wire
20 being connected to the third system coils;

two ferromagnetic bodies each being respectively provided to oppose to both sides of the lens holder, each ferromagnetic body being divided into four regions by x-axis and y-axis, which are perpendicular to each other,
25 each region being magnetized to N-pole or S-pole so that

the regions adjacent to each other can be magnetized to a different polarity, the x-axis being opposed to a straight line connecting the centers of the first system coil and the second system coil, the y-axis being opposed to a straight line passing at the center of the third system coil, wherein

an amount of displacement of the objective lens in the focusing direction is controlled by an added value or subtracted value of the electric currents flowing in the first and the second wire, an amount of displacement of the objective lens in the tilting angle direction is controlled by a subtracted value or added value of the electric currents flowing in the first and the second wire, and an amount of displacement of the objective lens in the tracking angle direction is controlled by an electric current flowing in the third wire.

2. A drive unit for driving an objective lens of an optical head, the drive unit comprising:

a lens holder for holding the objective lens;
a plurality of coils provided on sides of the lens holder;

a plurality of wires that supplies electric currents to the coils and supports the lens holder; and

a magnet that generates a magnetic field in a portion where the coils are provided,

wherein the plurality of wires comprise a first wire,
a second wire, a third wire and a common wire,

wherein the plurality of coils comprise a first system
coil connected between the first wire and the common wire,
5 a second system coil connected between the second wire and
the common wire, and a third system coil connected between
the third wire and the common wire, and

wherein the lens holder is to be displaced in a
focusing direction, in a tilting angle direction and in
10 a tracking direction independently from each other by the
three electric currents respectively flowing in the first,
the second and the third wire.

3. The drive unit according to claim 2, wherein each of
the first, the second and the third system coil comprise
15 a pair of coils each provided on both side of the lens
holder.

4. The drive unit according to claim 2, wherein the first
and the second system coil are arranged in a direction
perpendicular to the focusing direction, and

20 wherein the third system coil is arranged at a
position displaced in the focusing direction from a central
position of the first and the second system coils.

5. The drive unit according to claim 4, wherein the
magnet comprises a ferromagnetic body being provided to
25 oppose to the side of the lens holder, the ferromagnetic

body being divided into four regions by x-axis and y-axis, which are perpendicular to each other, each region being magnetized to N-pole or S-pole so that the regions adjacent to each other can be magnetized to a different polarity, the x-axis being opposed to a straight line connecting the centers of the first system coil and the second system coil, the y-axis being opposed to a straight line passing at the center of the third system coil.

6. The drive unit according to claim 4, wherein an amount of displacement of the objective lens in the focusing direction is controlled by an added value or subtracted value of the electric currents flowing in the first and the second wire, an amount of displacement of the objective lens in the tilting angle direction is controlled by a subtracted value or added value of the electric currents flowing in the first and the second wire, and an amount of displacement of the objective lens in the tracking angle direction is controlled by an electric current flowing in the third wire.

7. The drive unit according to claim 2, wherein each of the plurality of coils comprises a square flat coil of a same size.